

CLAIMS

1. ✓ The nucleotide sequences of CHD-1A and CHD-W as shown in Fig. 5, Fig. 7 and Fig. 8.
- a 2. A clone or subclones of CHD-1A and CHD-W as defined in ^{claim 1}.
3. A fragment of CHD-1A and CHD-W, as shown in Figure 5, Figure 7 and Figure 8, capable of giving W specific signal on hybridization to genomic DNA of a non-ratite bird.
4. A fragment of CHD-1A and CHD-W, as shown in Figure 5, Figure 7 and Figure 8, obtainable by restriction endonuclease digestion thereof and being capable of giving a W specific signal on hybridization to genomic DNA of a non-ratite bird.
- a 5. ^{claim 3} A clone or subclone of a fragment according to ~~either of claims 3 and 4.~~
6. A nucleic acid or fragment or oligonucleotide having substantially the sequence of CHD-1A and CHD-W as set out in Fig. 5, Fig. 7 and Fig 8.
7. A clone or a subclone of a nucleic acid or fragment or oligonucleotide according to claim 6.
8. A nucleic acid or fragment or oligonucleotide having substantially the same sequence of the chicken or great tit CHD-gene as set out in Figs 1, 3, 5, 7 or 8.
9. A nucleic acid or fragment or oligonucleotide containing substantially the nucleotide sequence set out in Figure 5, Figure 7 or Figure 8, being capable of giving a W chromosome specific signal on hybridization to the genomic DNA of a non-ratite bird.
10. A nucleic acid or fragment or oligonucleotide according to claim ~~4 or claim 9~~ capable of giving W chromosome specific signal on hybridization to the genomic DNA of a chicken, turkey, duck, parrot.

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a 11. ^{claim 4} A nucleic acid or fragment or oligonucleotide according to ~~any one of claims 4, 9 and 10~~, capable of giving W chromosome specific signal on hybridization to the genomic DNA of a non-ratite bird under conditions of high stringency.

a 12. ^{claim 4} A nucleic acid or fragment or oligonucleotide according to ~~any one of claims 4, 9 and 10~~ capable of giving W chromosome specific signal on hybridization to the genomic DNA of a non-ratite bird under conditions of low stringency.

a 13. ^{claim 9} A nucleic acid or fragment or oligonucleotide according to ~~any one of the claims 9 to 12~~ containing substantially the sequence of the chicken CHD-gene as set out in Fig. 5, Fig. 7 and Fig. 8.

14. A nucleic acid or fragment or oligonucleotide, containing substantially the nucleotide sequence shown in Figure 5, Figure 7 or Figure 8, encoding a CHD-protein, fragment thereof or polypeptide containing a CHD-gene or part thereof or encoding a CHD-mimotope protein or fragment thereof or CHD-mimotope polypeptide.

a 15. A process for ascertaining the sex of a non-ratite bird or of an embryo, foetus, cell or tissue of a non-ratite bird comprising hybridizing a ^{claim 1} nucleic acid or fragment or oligonucleotide according to ~~any one of claims 1 to 14~~ with DNA or RNA of the non-ratite bird or the embryo, foetus, cell or tissue or with cDNA reverse transcribed from RNA of the non-ratite bird or the embryo, foetus, cell or tissue or with cDNA or DNA amplified by cloning or polymerase chain reaction from DNA or RNA of the non-ratite bird or the embryo, foetus, cell or tissue.

a 16. ^{claim 1} Use of a nucleic acid or fragment or oligonucleotide of ~~any one of claims 1 to 14~~ in ascertaining the sex of a non-ratite bird or of an embryo, foetus, cell or tissue of a non-ratite bird.

a 17. A process for controlling the sex of the progeny of a non-ratite bird comprising inserting a nucleic acid or fragment or oligonucleotide of ~~any~~

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Claim 1

a ~~one of claims 1-14~~ into the genome of the non-ratite bird or progenitor thereof.

Claim 1

a 18. Use of a nucleic acid or fragment or oligonucleotide of ~~any one~~
a ~~of claims 1 to 14~~ in controlling the sex of the progeny of a non-ratite bird.

19. An avian CHD-protein, fragment thereof or polypeptide containing a CHD-gene of part thereof or a CHD-mimotope protein, fragment thereof or a CHD-mimotope polypeptide derived or derivable from an avian CHD gene.

20. A protein or fragment thereof, according to claim 19, which contains a CHD-chromobox and is derived or derivable from the nucleic acid sequence shown in Figure 5, Figure 7 or Figure 8.

21. A protein or fragment thereof or polypeptide containing a CHD-chromobox which is derived or derivable from the nucleic acid sequence shown in Figure 5, Figure 7 or Figure 8, including at least one of the characteristic amino acid residues at position 11, 12, 20, 27 or 31 inside the chromobox or 3, 6, 8, 12-15 or 16 directly downstream of the chromobox when aligned to best effect and as set out in Fig. 11.

22. A CHD-protein or fragment thereof or a polypeptide encoded by a nucleic acid or fragment or oligonucleotide according to ~~claims 1-14~~
a which is derived or derivable from the nucleic acid sequence shown in Figure 5, Figure 7 or Figure 8 and contains a CHD-chromobox

Claim 1

23. A process for controlling the sex of the progeny of a non-ratite bird comprising supplying exogenously to a cell of the bird or a progenitor of the bird a protein or fragment thereof or a polypeptide according to ~~any one of claims 19-22~~

Claim 19

a 24. A process according to claim 23 wherein the protein or fragment thereof or polypeptide is supplied and activates a CHD-1A or CHD-W target gene.

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25. An antibody or fragment thereof against a protein or fragment thereof or polypeptide according to ~~any one of claims 19-22~~ ^{claim 19}.
26. An antibody producing cell capable of expressing an antibody or fragment thereof according to claim 25.
27. Use of a protein or fragment thereof or polypeptide according to ~~any one of claims 19-22 or antibody or fragment thereof or cell according to claims 25 or 26~~ ^{claim 19} in ascertaining the sex of an embryo cell or tissue of a non-ratite bird.
28. A transgenic or chimeric non-ratite bird having a heterologous nucleic acid or fragment or oligonucleotide according to ~~any one of claims 1 to 14~~ ^{claim 1} in the genome of at least the germ cells of the bird.
29. Gametes of a non-ratite bird according to claim 28.
30. Progeny of a non-ratite bird according to claim 28.
31. Progeny according to claim 30 which are transgenic or chimeric and have a heterologous nucleic acid or fragment according to ~~any one of claims 1-14~~ in the genome of at least the germ cells of the progeny.
32. A method of controlling the population of a species of bird which comprises introducing an individual member of the species into the population, said individual having a copy or copies of a nucleic acid fragment or oligonucleotide according to ~~any one of claims 1 to 14~~ ^{claim 1} integrated on a chromosome (carrier chromosome) be it sex linked or autosomal whereby when the male breeds with other individuals of the population the progeny are substantially of one sex or are sexually dysfunctional intersexes.
33. A method according to claim 32 where the nucleic acid integrated into the carrier chromosome is homologous to the native *CHD-1A* or *CHD-W* gene of the bird.

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